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E7.4-10232

CR-136495

APPLICATION OF REMOTE SENSING

FOR FISHERY RESOURCE

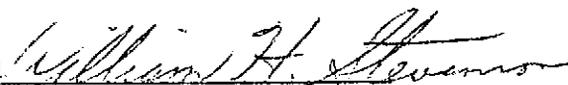
ASSESSMENT AND MONITORING

SKYLAB EXPERIMENT NO. 240

CONTRACT NO. T-8217B

MONTHLY PROGRESS REPORT NO. 8

REPORTING PERIOD: 10 DECEMBER 1973 - 10 JANUARY 1974

Approved 
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Date Submitted January 11, 1974

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E74-10232) APPLICATION OF REMOTE SENSING
FOR FISHERY RESOURCE ASSESSMENT AND
MONITORING Monthly Progress Report, 10
Dec. 1973 - (National Marine Fisheries
Service, Bay) 5 p HC \$3.00 CSCL 08A G3/13 Unclas 00232
N74-15037

APPLICATION OF REMOTE SENSING
FOR FISHERY RESOURCE
ASSESSMENT AND MONITORING

INTRODUCTION

This is the eighth of a monthly series of progress reports required by the Statement of Work for Project 240, entitled "Application of Remote Sensing for Oceanic Gamefish Assessment and Monitoring," under Contract No. T-8217B.

OVERALL STATUS

The post mission analytical phase is in progress.

REMOTE DATA ACCEPTANCE

During the current reporting period, no new C130 data have been received, but the S190A photography and the S192 screening films from Skylab were received. Both appear to be of excellent quality, but indicate cloud cover possibly in excess of 50% over the test area.

The S192 scanner produces data at a tremendous rate, so it was desirable to reduce as much as possible the coverage interval. Examination of the screening films and the field of view correlation led to reducing the requested interval from 80 seconds to approximately 40 seconds. In addition, three of the thirteen channels will contain very little or no information, so they were dropped from the request, further reducing the total data volume. The reduction of the data volume together with the fact that it is now planned to use the edited raw data stream rather than the "cleaned up" data product may result in receipt of the data

before the estimated June delivery date. While there is a severe problem with noise in the S192 data, it will in all probability have little or no effect on analyses.

RESULTS

The RS-18 data have been processed and are ready for production of the thermal map. Incorporation of PRT-5 data had been intended in a composite thermal map. However, that data have been determined to be discrepant due to instrument malfunction.

The E20-D spectrometer data have been reduced from the magnetic tapes. The average radiance for certain fishing squares and subsquares at the specified wavelengths has been recorded on coding forms and has been submitted for card punching.

The RC-8 and other photography have been analyzed carefully and the location of several rips has been determined to be one each in squares 5, 12, 14, 19, 24, and another just outside the fishing area. (For fishing square pattern, see map in Field Operations Report, 28 September 1973, appended to Monthly Progress Report No. 5). An attempt is being made to identify variations of water color in the photography and locate them relative to fishing squares, but this process has proved to be difficult thus far.

Production of the chlorophyll and turbidity time-histories from the E20-D data is proceeding well. Geographic correlation of chlorophyll measurements and spectrometer data has been completed and the radiance values will be extracted from the magnetic tapes and averaged over the

surface sample location shortly. The number of usable data points was much less than had been anticipated, but it appears that there will be enough good points to perform the analysis.

EXPECTED ACCOMPLISHMENTS

Analysis of Skylab data is currently concentrated on determining the relationship between sea truth data and resource data. The oceanographic parameters (water temperature, salinity, Secchi depth, sea state, depth, Forel-Ule color, chlorophyll a, chlorophyll b, chlorophyll c) and meteorological parameters (air temperature, atmospheric pressure) are being utilized as the independent variables along with the billfish parameter (dependent variable) in correlation computations and analysis.

Further effort is being expended to determine the best dependent variable to use for each species (sailfish, white marlin, blue marlin) and combined billfish. For example: sailfish raised only, sailfish hooked, sailfish raised only plus hooked, and sailfish boated are handled as both a continuous variable and a discrete variable. The sailfish parameter in each of the four states has also been normalized with respect to fishing pressure in rod hours and boat hours creating eight more dependent variables for a total of 16 to be correlated with the previously listed independent variables. This procedure also holds for blue marlin, white marlin, and a composite billfish parameter.

Upon completion of the selection of the best dependent variable for each species and the most significantly correlated independent variables, multiple regression runs will be made to generate the mathematical models.

SUMMARY OUTLOOK

Early receipt of the EREP analog tapes is essential. As stated in a letter dated 12 December 1973 from the Principal Investigator, W. H. Stevenson, to Z. Byrns, PI Management Office, JSC, Houston, Texas, "...if we receive the analog tape within the next two months we could possibly complete our analysis within the current contract period..."

If the period of contract performance is extended to allow for a late receipt, it appears at this time that additional funding will also be required.